ABSTRACT

Ray-intersection methods and apparatus that greatly facilitate processing associated with computer graphics are described. In the described embodiment, a collection of shapes are defined that approximate an object. The described shapes are polygons, with exemplary polygons comprising triangles. A ray is cast toward the approximated object, and a reference object which, in the described embodiment comprises one or more planes, is defined to contain the ray. Aspects of the individual shapes are pre-characterized to provide characteristic data. In the described embodiment, pre-characterization takes place by testing each of the vertices of the polygons to ascertain their position relative to the reference object. The characteristic data is then used to ascertain the position of the shapes that are defined by the vertices, relative to the reference object. This provides a sub-set of shapes that might be intersected by the ray. The sub-set of shapes is then evaluated to ascertain which of the shapes is intersected by the ray.